WHAT IS CLAIMED IS:

1. A method for correcting lens shading in image data captured by a camera, the method comprising the steps of:

obtaining, for a pixel in the image data, a distance value indicating the distance from an optical-axis position to the pixel;

from the obtained distance value, obtaining correction data for the pixel by reference to an approximation function that indicates relation between distance values and correction data for lens shading correction; and

based on the obtained correction data, correcting a pixel value of the pixel,

wherein the approximation function is divided into a plurality of segments, and represented by quadratic functions in the respective segments, the quadratic functions each being defined by a predetermined number of sample points.

2. The method of Claim 1, wherein in the approximation function, the segments are established so as to be relatively wide in a range closer to the optical-axis position, and to be relatively narrow in a range farther from the optical-axis position.

3. A method for correcting lens shading in image data captured by a camera, the method comprising the steps of:

obtaining, for a pixel in the image data, a horizontal coordinate value and a vertical coordinate value with respect to an optical-axis position;

from the obtained horizontal coordinate value, obtaining horizontal-direction correction data for the pixel by using a first approximation function that indicates relation between horizontal coordinate values and correction data for lens shading correction;

from the obtained vertical coordinate value, obtaining vertical-direction correction

data for the pixel by using a second approximation function that indicates relation between vertical coordinate values and correction data for lens shading correction;

summing the horizontal-direction correction data and the vertical-direction correction data; and

based on the correction data obtained by the summing operation, correcting a pixel value of the pixel,

wherein each of the first and second approximation functions is divided into a plurality of segments, and represented by quadratic functions in the respective segments, the quadratic functions each being defined by a predetermined number of sample points.

4. The method of claim 3, wherein in each of the first and second approximation functions, the segments are established so as to be relatively wide in a range closer to the optical-axis position, and to be relatively narrow in a range farther from the optical-axis position.

5. A system for correcting lens shading in image data captured by a camera, the system comprising:

a distance operation unit for obtaining, for a pixel in the image data, a distance value indicating the distance from an optical-axis position to the pixel;

a correction-data operation unit for obtaining, from the distance value obtained by the distance operation unit, correction data for the pixel by reference to an approximation function that indicates relation between distance values and correction data for lens shading correction; and

a correction unit for correcting a pixel value of the pixel based on the correction data obtained by the correction-data operation unit,

wherein the approximation function is divided into a plurality of segments, and represented by quadratic functions in the respective segments, the quadratic functions each being defined by a predetermined number of sample points; and

the correction-data operation unit receives data regarding the sample points for one of the segments to which the distance value belongs, and obtains the correction data in accordance with one of the quadratic functions that is defined by those sample points.

6. A system for correcting lens shading in image data captured by a camera, the system comprising:

first and second coordinate operation units for obtaining, for a pixel in the image data, respective horizontal and vertical coordinate values with respect to an optical-axis position;

a first correction-data operation unit for obtaining, from the horizontal coordinate value obtained by the first coordinate operation unit, horizontal-direction correction data for the pixel by reference to a first approximation function that indicates relation between horizontal coordinate values and correction data for lens shading correction;

a second correction-data operation unit for obtaining, from the vertical coordinate value obtained by the second coordinate operation unit, vertical-direction correction data for the pixel by reference to a second approximation function that indicates relation between vertical coordinate values and correction data for lens shading correction;

an adder for summing the horizontal- and vertical-direction correction data obtained by the respective first and second correction-data operation units; and

a correction unit for correcting a pixel value of the pixel based on correction data obtained by the adder,

wherein each of the first and second approximation functions is divided into a

plurality of segments, and represented by quadratic functions in the respective segments, the quadratic functions each being defined by a predetermined number of sample points; and

the first correction-data operation unit receives data regarding the sample points for one of the segments to which the horizontal coordinate value belongs, and obtains the correction data in accordance with one of the quadratic functions that is defined by those sample points, while the second correction-data operation unit receives data regarding the sample points for one of the segments to which the vertical coordinate value belongs, and obtains the correction data in accordance with one of the quadratic functions that is defined by those sample points.

7. A digital camera comprising:

a shading correction system of claim 5, and

a rewritable memory in which the data regarding the sample points is stored.

8. A digital camera comprising:

a shading correction system of claim 6, and

a rewritable memory in which the data regarding the sample points is stored.